DISTRICT REPORTS

OHIO RIVER AND TRIBUTARIES AT AND ABOVE DAM NO. 13

By W. S. BROTZMAN

Over the Pittsburgh River district the month of January 1937 was characterized by mild weather with little snow and freezing temperature, and with frequent and unusually heavy rainfall. The rainfall for the month as a whole was greater than that of any other winter month with the exception of a narrow belt in the extreme eastern portion of the district where rainfall was excessive in March 1936.

The frequent rains kept the ground in a thoroughly saturated condition, and in addition furnished sufficient water to produce a rapid and heavy run-off. The water courses were running bankful from the 15th to near the end of the month, and were in flood in portions of the district almost continuously from the 18th to the 28th.

While the upper reaches of the rivers were in flood or near flood, generally, the flooding and damage was most extensive over the lower portion of the basin, between Pittsburgh and Dam No. 13, McMechen, W. Va. The Allegheny River rose considerably above flood stage between Lock No. 8, near Mosgrove, Pa., and Pittsburgh, Pa., but there was only slight damage, due largely to the fact that damageable property had been removed to safety. The Monongahela River was only slightly above flood stage and no damage was done.

At Pittsburgh, Pa., the river rose to 9.5 feet above the damage stage, but damage was remarkably slight. Warnings of the probable crest stages were issued in ample time to permit all possible precaution, thus limiting the principal losses to the suspension of business and cleaning up after the water receded. The local executive of the Red Cross reported that there were a few houseboats lost, but that they had no calls for rehabilitation as a result of the flood.

OHIO RIVER AND SOUTHERN TRIBUTARIES FROM BELOW DAM NO. 13 TO AND INCLUDING POINT PLEASANT, W. VA.

By R. P. POWELL

The January 1937 flood was the second highest flood of record in the central and lower parts of the district. Flood stage was first reached in the lower end of the district on the morning of the 17th. To understand this better, a review of conditions since the 14th is necessary.

On the 14th the Ohio River was about 18 feet under flood stage in the upper part of the district, 14 feet in the central, and only 9 feet in the lower. This was due to the heavy rains that had fallen over the entire watershed on the 10th and 11th and had partially run off thereby leaving the lower part of the district at a comparatively higher stage than the upper. These comparatively high stages were then fed by heavy rain over the Muskingum, the central and lower Ohio Valleys, and moderately heavy rains over the Little and the Great Kanawha, and upper Ohio Valleys on the night and morning of the 15th. This caused the tributaries to rise at all points.

Then, on the night and morning of the 18th heavy rains fell over the entire watershed and caused all the tributaries to start rising again. On the morning of the 19th, the heavy rains over the immediate valley had failed to fill in the differences in the stages of the upper and lower parts of the district, the lower parts still remaining, roughly, 10 to 15 feet higher.

Heavy rains occurred over the Great Kanawha watershed on the night of the 19th and 20th, causing the Great Kanawha River to rise rapidly and moderately heavy to heavy rains over the entire watershed on the 20th and the 21st caused all the tributaries to rise rapidly. Heavy rains again occurred over the lower Ohio and the Little Kanawha Valleys, and moderate rains over the remainder of the watershed on the afternoon of the 22d and the morning of the 23d.

On the morning of the 24th the Ohio River had become stationary to within 30 miles of Parkersburg, W. Va., the Muskingum River was falling as far down as Beverly, Ohio, and the Ohio River was rising very slowly at Parkersburg with a stage of 50.6 feet. Heavy rain beginning at 5 a. m. of the 24th over the central and northern parts of the district caused a secondary rise in the Little Kanawha, Muskingum, and upper Ohio Rivers.

No reports were received on the morning of the 25th because the Western Union wires were inundated, so that the forecasts were based on rainfall reports by radio and by telephone and by the action of the river. A few reports were received from the Pittsburgh, Pa., district on the morning of the 26th.

The Ohio River became stationary at Marietta, Ohio, and Parkersburg, W. Va., the afternoon and evening of the 26th, with a crest of 55.0 feet at Marietta and 55.4 feet at Parkersburg. Communication was still impossible with the lower parts of the district, but it was later determined that the crest at Point Pleasant, W. Va., was 62.7 feet on the morning of the 27th.

Communication was most difficult from the 24th until the 29th, but with the cooperation of the telephone company we were able to use whatever lines they had at any time. For instance, some calls made to Marietta, Ohio, 14 miles distant, were routed through Clarksburg, W. Va., Pittsburgh, Pa., Columbus, Ohio, and thence to Marietta, Ohio. So that about 400 miles of wire was used to complete these calls.

OHIO RIVER AND SOUTHERN TRIBUTARIES FROM AND INCLUDING THE MOUTH OF THE KANAWHA, TO AND INCLUDING THE MOUTH OF THE LITTLE KENTUCKY; THE NORTHERN TRIBUTARIES OF THE OHIO FROM DAM NO. 31 TO A POINT OPPOSITE THE MOUTH OF THE LITTLE KENTUCKY

By W. C. DEVEREAUX

The rainfall over the Cincinnati district, and especially along the Ohio River, during the period from January 7–25, 1937, was far in excess of any previous rainfall in this region for a period of 3 weeks or even for a full month. This caused the highest river stages of record at all the stations on the Ohio River from Dam No. 26 to Dam No. 39 and below to the mouth of the river.

The rainfall up to January 13 had been only moderately heavy in this district, and of sufficient amount to fill the river but not to the flood stage. Even the heavy rains on January 14–15 only filled the low places in the river above Cincinnati, and the river at Cincinnati fell 2 feet from the 15th to the 17th.

However, heavy and excessive rains started again on the 17th and continued for 9 days. As all the land surface was saturated with water and all the rivers and streams were bankful, the excessive rainfall ran directly into the river and caused rises as much as 0.4 foot in 1 hour and 6.9 feet in 24 hours at stages above 60 feet. The flood stage was first reached in the lower portion of the river on January 8, and then progressed slowly up the river, reaching Dam No. 38, in the lower part of the Cincinnati district, on January 15, Cincinnati on January 18 and Dam No. 26, in the upper part of the district, on January 19.

As the river was rising so fast and conditions so threatening additional river gages were established by surveys to provide for all possible stage heights. This precaution was taken as a matter of convenience for reading the Broadway gage, but proved most fortunate as both the Broadway gage and the recording gage at the West End Power Plant were flooded at a stage of 72 feet. Special observers read the gages each hour and reported to the Weather Bureau Office within 10 minutes after the hour for a period of 14 days. These readings were made to the hundredth of a foot. The two sets of readings gave most valuable records of stage heights not only for current use but for permanent record of the extreme stages.

The forecasts and warnings were made and fully distributed at frequent intervals. The probable crests were determined for each period when it seemed that the rains might cease, but when heavy rains started again the warning was to keep property 4 feet above the water surface as long as the river continued to rise rapidly, and then gradually decrease this margin as the crest was approached.

Every effort was made to give all reports the widest possible distribution and this phase of the service was very successful. The teletype service from the airport was moved to the Observatory, and gave great assistance in collecting weather reports. The United States Engineers collected river and weather reports, and greatly assisted in the distribution of reports. Electric power, gas, and telephone services were furnished the Weather Bureau when most other industries and residences were cut off, as this was necessary for the protection of lives and property. The weather maps and river bulletins were printed each day in the Weather Bureau Office and also in the Times Star. The hourly bulletins were broadcast by the four regular broadcasting stations and by five special stations set up for that purpose.

The Ohio River in the Cincinnati district was at a higher stage than ever before recorded. The record is fairly complete for 147 years. The excess over previous years increased from 1.6 feet at Dam No. 26 in the upper part of the district to 8.9 feet at Cincinnati and to 9.4 feet at Dam No. 39, the last station in the district.

The tributary streams in the Cincinnati district were in flood only in their lower portions and some of these streams up the valley were not even in flood. The Kentucky River was in superflood for 117 miles up the river, with highest stages of record at Frankfort